IN THE CLAIMS:

1. (Currently Amended) A method for controlling optical power in a monitoring device intended for determining the amount of at least one light absorbing substance in a subject, the monitoring device comprising

-emitters for emitting radiation at a minimum of two wavelengths

-driving means for activating said emitters, and

-a detector for receiving said radiation at said wavelengths and for producing an electrical signal in response to the radiation,

the method comprising the steps of

-supplying driving pulses from said driving means to the emitters, the pulses having predetermined characteristics determining the optical power of the device,

-demodulating the electrical signal originating from said detector whereby a baseband signal is obtained;

transforming the baseband signal into a frequency spectrum to identify an amplitude and a noise level of the baseband signal, whereby a signal-to-noise ratio of the amplitude to the noise for the baseband signal is obtained;

-monitoring ~~a~~ the signal-to-noise ratio of the baseband signal, and

-controlling the duty cycle of the driving pulses in dependence on the monitored signal-to-noise ratio.

2. (Currently Amended) A method according to claim 1, wherein said controlling step includes controlling the duty cycle of the driving pulses so that the ~~optical power~~ signal to noise ratio is ~~minimized~~ maintained within the confines of a predetermined ~~lower threshold set~~range for the signal-to-noise ratio.

3. (Currently Amended) A method according to claim 2, wherein said controlling step further includes comparing the monitored signal-to-noise ratio to said predetermined range, said predetermined range being defined by a predetermined lower threshold and ~~to~~ a predetermined higher threshold.

4. (Original) A method according to claim 3, further including the step of connecting the electrical signal originating from said detector through a preamplifier and a low-pass-filter prior to said demodulating step.

5. (Original) A method according to claim 4, wherein said controlling step includes

-performing at least one operation in response to said signal-to-noise ratio reaching said lower threshold, the said at least one operation being selected from a group of operations including (1) the increase of the width of said pulses and (2) the increase of pulse repetition rate, and

- decreasing the bandwidth of said low-pass filter when the width of said pulses is increased.

6. (Original) A method according to claim 5, wherein the controlling step further includes the step of increasing the amplitude of said driving pulses.

7. (Original) A method according to claim 4, wherein said controlling step includes

-selecting at least one operation in response to said signal-to-noise ratio reaching said higher threshold, the said at least one operation being selected from a group of operations including (1) the decrease of the width of said pulses and (2) the decrease of pulse repetition rate, and

- increasing the bandwidth of said low-pass filter when the width of said pulses is decreased.

8. (Original) A method according to claim 8, wherein the controlling step further includes the step of decreasing the amplitude of said driving pulses.

9. (Original) A method according to claim 1, wherein said demodulating step includes sampling of the electrical signal by a synchronous detector, taking one sample per each pulse of the electrical signal.

10. (Original) A method according to claim 1, wherein the amount of at least one light absorbing substance is determined in the blood of a subject.

11. (Original) A method according to claim 1, wherein the monitoring device is a pulse oximeter.

12. (Currently Amended) An apparatus for non-invasively determining the amount of at least one light absorbing substance in a subject, the apparatus comprising

- emitters for emitting radiation at a minimum of two different wavelengths,

- driving means for activating said emitters, adapted to supply driving pulses to the emitters, the pulses having predetermined characteristics determining current optical power of the device,

- a detector for receiving said radiation at said wavelengths an producing an electrical

signal in response to the radiation,

- a demodulator unit for demodulating the electrical signal originating from the detector, whereby a baseband signal is obtained from the demodulator unit,

- monitoring means for:

transforming the baseband signal into a frequency spectrum;

generating a signal-to-noise ratio of the transformed baseband signal; and

monitoring the signal-to-noise ratio of the baseband signal, and

- power control means, responsive to the monitoring means, for controlling the duty cycle of the driving pulses.

13. (Currently Amended) An apparatus according to claim 12, wherein the power control means are adapted to control the duty cycle so that the ~~optical power is minimized within the confines of a predetermined lower threshold set for the~~ signal-to-noise ratio is maintained within a predetermined range between a first threshold and a second threshold.

14. (Original) An apparatus according to claim 13, further comprising a low-pass filter for filtering said electrical signal prior to said demodulating, the control means comprising at least one set of first and second means, wherein the first means are adapted to change the width of said pulses and of the passband of the low-pass filter, and the second means are adapted to increase pulse repetition rate.

15. (Original) An apparatus according to claim 14, wherein the control means further comprise means for changing the amplitude of said pulses.

16. (Currently Amended) An apparatus according to claim 13, wherein said apparatus ~~being a non-invasive monitoring device, preferably~~ is a pulse oximeter.

17. (New) A method for controlling optical power in a monitoring device intended for determining the amount of at least one light absorbing substance in a subject, the monitoring device comprising

-emitters for emitting radiation at a minimum of two wavelengths,

-driving means for activating said emitters, and

-a detector for receiving said radiation at said wavelengths and for producing an electrical signal in response to the radiation,

the method comprising the steps of

-supplying driving pulses from said driving means to the emitters, the pulses having

predetermined characteristics determining the optical power of the device,

-demodulating the electrical signal originating from said detector to generate demodulated signals for said wavelengths;

- obtaining a DC signal component for at least one of said demodulated signals;

-monitoring a signal-to-noise ratio of the DC signal component, and

-controlling the duty cycle of the driving pulses in dependence on the monitored signal-to-noise ratio of the DC signal component.

18. (New) A method according to claim 17, wherein said controlling step includes controlling the duty cycle of the driving pulses so that the signal to noise ratio is maintained within the confines of a predetermined range for the signal-to-noise ratio.

19. (New) A method according to claim 18, wherein said controlling step further includes comparing the monitored signal-to-noise ratio to said predetermined range, said predetermined range being defined by a predetermined lower threshold and a predetermined higher threshold.

20. (New) A method according to claim 19, further including the step of connecting the electrical signal originating from said detector through a preamplifier and a low-pass-filter prior to said demodulating step.

21. (New) A method according to claim 20, wherein said controlling step includes

-performing at least one operation in response to said signal-to-noise ratio reaching said lower threshold, the said at least one operation being selected from a group of operations including (1) the increase of the width of said pulses and (2) the increase of pulse repetition rate, and

- decreasing the bandwidth of said low-pass filter when the width of said pulses is increased.

22. (New) A method according to claim 21, wherein the controlling step further includes the step of increasing the amplitude of said driving pulses.

23. (New) A method according to claim 20, wherein said controlling step includes

-selecting at least one operation in response to said signal-to-noise ratio reaching said higher threshold, the said at least one operation being selected from a group of operations including (1) the decrease of the width of said pulses and (2) the decrease of pulse repetition rate, and

- increasing the bandwidth of said low-pass filter when the width of said pulses is

decreased.

24. (New) A method according to claim 23, wherein the controlling step further includes the step of decreasing the amplitude of said driving pulses.

25. (New) A method according to claim 17, wherein said demodulating step includes sampling of the electrical signal by a synchronous detector, taking one sample per each pulse of the electrical signal.

26. (New) A method according to claim 17, wherein the amount of at least one light absorbing substance is determined in the blood of a subject.

27. (New) A method according to claim 17, wherein the monitoring device is a pulse oximeter.

28. (New) An apparatus for non-invasively determining the amount of at least one light absorbing substance in a subject, the apparatus comprising

- emitters for emitting radiation at a minimum of two different wavelengths,

- driving means for activating said emitters, adapted to supply driving pulses to the emitters, the pulses having predetermined characteristics determining current optical power of the device,

- a detector for receiving said radiation at said wavelengths an producing an electrical signal in response to the radiation,

- a demodulator unit for demodulating the electrical signal originating from the detector to generate demodulated signals for said wavelengths, whereby a DC signal component of at least one of said demodulated signals is obtained from the demodulator unit,

- monitoring means for monitoring a signal-to-noise ratio of the DC signal component , and

- power control means, responsive to the monitoring means, for controlling the duty cycle of the driving pulses.

29. (New) An apparatus according to claim 28, wherein the power control means are adapted to control the duty cycle so that the signal-to-noise ratio is maintained within a predetermined range between a first threshold and a second threshold.

30. (New) An apparatus according to claim 29, further comprising a low-pass filter for filtering said electrical signal prior to said demodulating, the control means comprising at least one set of first and second means, wherein the first means are adapted to change the width of said

pulses and of the passband of the low-pass filter, and the second means are adapted to increase pulse repetition rate.

31. (New) An apparatus according to claim 30, wherein the control means further comprise means for changing the amplitude of said pulses.

32. (New) An apparatus according to claim 29, wherein said apparatus is a pulse oximeter.